REMARKS

By the present Amendment, Claims 1, 3, 5, 6, 11, 13, 15, and 16 are amended and new claim 24 is added. Upon entry of this Amendment, claims 1, 3, 5-9, 13, and 15-20 will be pending of which two (claims 1 and 11) are independent. No new matter will be incorporated into the present application by entry of this Amendment.

In the Office Action mailed January 11, 2006, the Examiner rejected claims 1-7, 9-17 and 19-23 under 35 U.S.C. §103(a) as being unpatentable over USPN 6,090,481 to Depauw; and rejected claims 8 and 18 under 35 U.S.C. §103(a) as being unpatentable over Depauw in view of USPN 5,837,361 to Glaser et al. Applicant respectfully disagrees with the rejections, and with the characterizations of the art and Applicant's invention.

Claims 2, 4, 10, 12, 14, and 21-23 are hereby cancelled. As a result, the rejections on these claims are rendered moot. Applicant, however, disagrees with the rejections issued on these claims and expressly reserves the right to pursue such claims in future prosecution. Further, Applicant disagrees with rejections on the remaining claims and requests reconsideration. The present amendment focuses the remaining claims on commercial embodiments on which the Applicant is currently focusing. However, Applicant expressly reserves the right to pursue the original claims in future prosecution.

As a starting point, it is useful to provide some background on the invention. The Applicant wished to have a low-emissivity coating that would not become hazy when tempered. To accomplish this, the Applicant conceived the idea of using an intermediate dielectric stack made up of several particularly thin layers formed from very different materials. Adjacent layers were formed from very different materials to keep crystals that grow in a layer during tempering from growing larger than the thickness of the layer. In more detail, by using very different materials for adjacent layers, crystal growth in a layer tends not to tie into crystal growth in adjacent layers. Thus, by keeping the thickness of each layer very small, crystals tend not to grow so large during tempering as to scatter light and cause haze.

Since the coating was intended to endure tempering, the intermediate dielectric stack of the coating needed to be stable when tempered, with low oxygen permeability. It

was conceived to use film comprising silicon nitride, which Applicant discovered is particularly good for providing low oxygen permeability and stability when tempered. However, the Applicant determined that silicon nitride, when used at large thicknesses, imparts a great deal of stress in the coating. (High stress, of course, is to be avoided, since it can lead to delamination of the coating.) Surprisingly, Applicant found that low stress levels can be achieved by using one or more very thin films comprising silicon nitride and splitting up the overall thickness of an intermediate coat among the film(s) comprising silicon nitride and one or more films comprising oxide or suboxide. (The oxide or suboxide film tends to have very different crystalline habits than the film comprising silicon nitride.) The Applicant clearly came upon unexpected results when they discovered the possibility to use one or more intermediate films comprising silicon nitride while still achieving low stress. Thus, some preferred embodiments of the invention involve using a plurality of films comprising silicon nitride in combination with a plurality of films comprising oxide or suboxide, where all the films comprising silicon nitride have lesser thickness than the films comprising oxide or suboxide. While Applicant maintains its invention is much broader in scope, these embodiments provide a surprisingly effective technique for breaking up the stress in an intermediate stack that incorporates silicon nitride to obtain low oxygen permeability and stable tempering.

Turning now to the prior art, there simply is no teaching, suggestion, or other motivation in the Depauw reference that would even begin to render obvious the idea of providing an intermediate stack with two films comprising silicon nitride and three films comprising oxide or suboxide, wherein each film comprising silicon nitride has a lesser thickness than each film comprising oxide or suboxide. The cited art provides absolutely no motivation for this relative thickness arrangement.

In the full paragraph on page 3 of the Office Action, the Examiner sets forth a collection of statements as to why it would have been obvious to modify the thickness construction of Depauw. Applicant considers that this collection of statements is tantamount to being a failure to consider the relative thickness limitation. It is well settled, of course, that all claim limitations must be considered.

Turning more specifically to the individual statements in the noted paragraph of the Office Action, it can be seen that each statement is unconvincing.

First, the Examiner says that "the use of preferred materials and the optimum or workable ranges discovered by routine experimentation is ordinarily within the skill of the art". However, there is nothing in Depauw that would lead one of ordinary skill in the art to seek to optimize Depauw's coating by varying the relative thicknesses of the individual layers making up an intermediate dielectric stack (referred to by Depauw as "non-absorbent 2" or "Ox-2"). Depauw is concerned with the visible transmission, visible reflection, color, and infrared reflection of a coating used on laminated glass (where the coating and a tear-resistant plastic interlayer are sandwiched between two glass sheets). In controlling the optics and infrared reflection of the coating, the relative thicknesses of the individual layers making up the intermediate stack are not controlling; what matters is the total optical thickness of all the individual layers of the intermediate stack, as well as the total optical thickness of the base coat (referred to by Depauw as "non-absorbent 1" or "Ox-1"), the total optical thickness of the outer coat (referred to by Depauw as "non-absorbent 3" or "Ox-3"), the thicknesses of the infrared-reflective layers (referred to by Depauw as "metal 1" and "metal 2"), and the thickness ratios of non-absorbent 2 to non-absorbent 1 and non-absorbent 3 to non-absorbent 1. A careful review of Depauw shows these to be the only features with which Depauw is concerned. Depauw teaches specific total thicknesses for non-absorbent 1, for metal 1, for non-absorbent 2, for metal 2, and for non-absorbent 3. Depauw also teaches specific ranges for the total thickness of metal 1 plus metal 2. Further, Depauw teaches specific ratios for the thickness of non-absorbent 2 to the thickness of non-absorbent 1. These are the parameters that control the optics and infrared reflection levels. The relative thicknesses of the individual layers making up an intermediate dielectric stack do not control these properties. Thus, nowhere in Depauw is there motivation to provide an intermediate stack with two films comprising silicon nitride and three films comprising oxide or suboxide, wherein each film comprising silicon nitride has a lesser thickness than each film comprising oxide or suboxide.

Turning to the second statement in the noted paragraph of the Office Action, the Examiner says "Further, it would have been obvious to modify the thickness construction because the applicant has not disclosed that having the specific thickness construction solves any stated problem or is for any particular purpose...Therefore, considering that

the current applicant fails to teach or suggest unexpected results relating to the claimed thickness limitation...it would have been obvious to one having ordinary skill in the art...". Thus, the Examiner suggests the unexpected results discussed above are not persuasive because they were not sufficiently discussed in the specification. This line of reasoning, however, is improper. The structure claimed (the relative thickness arrangement) is recited in the specification as being an embodiment of the invention. While the Examiner alleges the unexpected results are not described sufficiently in the specification, these unexpected results are real and must be considered. An applicable precedent was established in the case of *In re Zenitz*, 33 F.2d 924, 142 USPQ 158 (C.C.P.A. 1964). In that case, the Examiner refused to consider unexpected properties because they were not originally disclosed in the specification. The CCPA disagreed with the Examiner. The invention was a chemical compound that was useful as a hypotensive agent, antinauseant, antipyretic, and sedative. The Examiner rejected the claimed invention based on the prior art reference Cusic and various secondary references. The applicant conceded that the proposed combination resulted in the claimed invention; however, Zenitz contended it would not have been obvious to combine the references given the unexpected benefits resulting from the combination. The Examiner refused to consider the unexpected properties because they were not originally disclosed in the specification. On appeal, the CCPA disagreed with the Examiner. The court held that the specification supported the asserted unexpected properties even though it made no direct reference to them. The CCPA said:

> In the case before us Zenitz disclosed his compounds to be useful as tranquilizers as well as hypotensives, sedatives, etc. It is true he made no mention of the separation of hypotensive and tranquilizing activity, but...the advantage of minimized hypotensive activity would inherently flow from the indicated use of the compounds as tranquilizers.

Thus, so long as the unexpected benefits were a result of the claimed embodiment, they could be used to show nonobviousness. Accordingly, Applicant

submits it is improper for the unexpected results of the presently claimed embodiments not to be considered.

Referring again to the noted paragraph of the Office Action, the Examiner says "...considering that the applicant discloses that if desired all the layers of the invention may actually have the same thickness...it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the thicknesses of the layers, such as currently claimed...". Applicant considers that this reasoning also is improper. The fact the Applicant discloses other embodiments, not currently being claimed, which do not benefit from the same reasons for patentability should not bear on whether the claimed embodiments are non-obvious. The Examiner's reasoning here effectively uses the Applicant's specification as a guide for setting forth the outstanding rejection, instead of citing evidence from the prior art.

Federal Circuit precedent shows this to be improper. For example, in the case of *In re Lam*, Civ. App. 01-1622, 2002 WL 962714 (Fed. Cir. May 9, 2002) (unpublished), the invention involved an apparatus to produce an electrically generated output (sound, light, or heat) in response to a physical input (light or motion). Applications of the invention include electronic wind chimes, decorative refrigerator magnets that exhibit a particular pattern of light or sound when the refrigerator door moves, and an apparatus to dispense aromatic vapor. The invention achieved the desired result through the use of a transducer that, when triggered, created an output of sound, light, or heat from the display. An external environmental stimulus, such as air movement, triggered or energized the transducer. The invention also included a device that could plug into a cigarette lighter in a car in order to power a light- and motion-activated decorative display. The examiner rejected claim 15 of the application, which required a rotational means for rotatably adjusting the length of a supporting member, based on alleged obviousness over U.S. Patent No. 4,842,235 to Brown, which taught a lighted clipboard attached to an adjustable plug that fits into a car's cigarette lighter. Brown disclosed only the telescoping method of adjusting the plug length. However, the Examiner found the rotational element of claim 15 obvious over Brown when viewed in light of the knowledge of one of skill in the art. According to the Examiner, "one of skill in the art would know of the equivalence of rotational and telescoping adjustment systems." Lam

appealed to the Board, which affirmed the rejection because it found that Lam's disclosure of the telescopic and rotational embodiments conceded their equivalence, and the mere substitution of one functionally equivalent element for another would have been obvious to one of skill in the art. On appeal, the Federal Circuit reversed. Lam argued that the Board did not properly set forth a prima facie case of obviousness with respect to claim 15. Lam contended that the Board failed to point to any reference other than the teachings of his own specification to show the equivalency of the telescoping and rotational adjustment mechanisms. The Federal Circuit agreed. Thus, in the present Office Action, Applicant considers it improper for the Examiner to use Applicant's own teaching to support an obviousness rejection based on the equivalency of two separate embodiments taught in Applicant's specification.

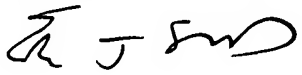
Further, in the noted paragraph of the Office Action, the Examiner says that "...it is understood by one of ordinary skill in the art that layer thicknesses determine properties such as transmittance, reflectance, emissivity, and color...". As discussed above, in controlling the transmittance, reflectance, emissivity, and color of the coating, the relative thicknesses of the individual layers making up an intermediate stack are not controlling. Rather, what matters is the total optical thickness of all the individual layers of the intermediate stack, the total optical thickness of the base coat, the total optical thickness of the outer coat, the thicknesses of the infrared-reflective layers, and the thickness ratios of intermediate stack to base coat and outer coat to base coat. Thus, nowhere in Depauw is there motivation to provide an intermediate stack with two films comprising silicon nitride and three films comprising oxide or suboxide, wherein each film comprising silicon nitride has a lesser thickness than each film comprising oxide or suboxide.

Finally, the Examiner states "... it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art". However, there is no teaching in Depauw that varying the relative thicknesses of the individual layers making up an intermediate stack controls the transmittance, reflectance, emissivity, or color. This is not surprising because, as described above, the relative thicknesses of the individual layers making up an intermediate stack do not control these properties. Thus,

there simply is no motivation for adjusting the thickness arrangement of Depauw in such a way as to end up with the relative thicknesses presently claimed by the Applicant.

In view of the foregoing remarks and amendments, Applicant submits that the outstanding obviousness rejections should fairly be withdrawn.

Respectfully submitted,



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